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In the ninth chapter WIESNER describes the differences in tone that have often been observed in the green of leaves and connects it with the excess, deficiency, or sufficiency of the illumination, much as STAHL and JÖNSSON had done on somewhat different grounds. The tenth chapter attempts a physiological analysis of the *Lichtgenuss*, which inevitably is "up in the air." The last chapter shows how the study of light relations by the photometric methods proposed can be of service in plant culture; and how the results of such study may serve as guides to proper planting in all sorts of conditions and locations. A bibliography (4 pp.) and a double index (topics and plant names) complete the book.

While for him who wishes to carry on investigations along these lines the various memoirs that have come from WIESNER'S hand are indispensable, this book will better serve one who desires merely a general statement of results and principles. At the same time it must be said that the book contains much that is wholly familiar and commonplace, so that it might have been much condensed to advantage; but perhaps the picture would not have been so complete. Furthermore, the book is by no means free from doubtful generalizations and generous assumptions; indeed, it seems that everyone who deals with adaptations must allow his imagination a rather loose rein. Withal there is in the work an important nucleus of no little value, and even an occasional flight of fancy may be permitted, if it stimulate interest.—C. R. B.

MINOR NOTICES

Cryptogamic flora of Brandenburg.³—The second part of the volume on Algae, by LEMMERMAN, has now appeared. It concludes the Oscillatoriaceae; includes Nostocaceae, Microchaetaceae, Scytonemataceae, Stigonemataceae, Rivulariaceae, and Campotrichiaceae; and begins the Flagellatae.—J. M. C.

List of British plants.—DRUCE⁴ has published a list of British plants, including the "Spermophytes, Pteridophytes, and Charads," found either as natives or growing in a wild state in Britain, Ireland, and the Channel Isles. The introduction contains a protest against the *nomina conservanda* of the Vienna Congress, and these are "deliberately ignored." The list is especially for "working botanists and members of the exchange clubs." The census of species shows 1390 native species, 144 alien species now well established, and 940 more or less fugitive aliens, the total enumeration including 2964 numbers.—J. M. C.

Trees and shrubs.—A preliminary announcement of SARGENT'S *Trees and shrubs* appeared in this journal in 1902, and there followed notices⁵ of the four parts which completed the first volume in 1905. The first part of the second

³ LEMMERMAN, E., Kryptogamenflora der Mark Brandenburg, Band 3, Heft 2. Algen. pp. 129-304. Leipzig: Gebrüder Borntraeger. 1907. Algen (Band 3, Heft 1 u. 2). M9.50.

⁴ DRUCE, GEORGE CLARIDGE, List of British plants. pp. xv + 104. Oxford: Clarendon Press. 1908. 2s. 6d.

⁵ BOT. GAZETTE 34:388. 1902; 35:62. 1903; 36:68. 1903; 37:155. 1904; 39:372. 1905.

volume has now appeared.⁶ The twenty-five species illustrated include six new species of *Crataegus* from Missouri, and new species from China or Japan under *Ulmus*, *Berberis*, and *Viburnum* (3). Four new species of *Lonicera* from China are described without illustration by REHDER, who also describes and illustrates a new hybrid under *Malus*. The tropical American (Florida and Mexico to Central America) species illustrated are *Alvaradoa amorphoides* Liebm., *Pinus Greggii* Engelm., and *P. Lumholtzii* Robinson and Fernald. The ten remaining species are from China or Japan, and belong to *Berberis*, *Acer*, *Rhododendron*, *Viburnum* (5), and *Lonicera* (2).—J. M. C.

Plant phyla.—Professor BESSEY⁷ has been working for many years upon a natural (evolutionary) classification of plants, and the result has just appeared in published form. He recognizes fifteen great "phyla," and presents a diagram to illustrate their relationship. It is impossible to give any adequate conception of the scheme, for it is very compactly presented and includes an enormous mass of details. A glimpse of the point of view may be obtained from the following list of the "phyla," the number following each name indicating the number of families included: Myxophyceae (9), Protophyceae (17), Zygomyceteae (21), Siphonophyceae (18), Phaeophyceae (23), Carpophyceae (26), Carpomyceteae (145), Bryophyta (54), Pteridophyta (13), Calamophyta (4), Lepidophyta (7), Cycadophyta (9), Gnetales (1), Strobilophyta (9), Anthophyta (280). The labor involved in organizing and defining these 636 families must have been enormous.—J. M. C.

American Breeders' Association.—The literature of breeding which is now growing with great rapidity is necessarily much scattered. The third annual report of the American Breeders' Association⁸ contains a large number of papers covering a wide range of subjects relating to both plant and animal breeding. The papers which are of most interest to scientific breeders and students of heredity are "Inheritance in pedigree breeding of poultry" and "Recent advances in the theory of breeding," by C. B. DAVENPORT; "The production and fixation of new breeds," by W. E. CASTLE; "Some results in selecting red clover for disease resistance," by S. M. BAIN; "Heredity in carnation seedlings," by J. B. NORTON; "Report of the committee on theoretic research in heredity," by CHARLES W. WARD; "The chromosome in the transmission of hereditary characters," by W. J. SPILLMAN. There are also a number of excellent papers and reports which must be of the greatest value to breeders of the economic crops. One of the best of these

⁶ SARGENT, C. S., *Trees and shrubs*. Illustrations of new or little known ligneous plants, prepared chiefly from material at the Arnold Arboretum of Harvard University. Vol. II. Part I. pp. 1-55. pls. 101-125. Boston and New York: Houghton, Mifflin & Company. 1907. \$5.00.

⁷ BESSEY, CHARLES E., *A synopsis of plant phyla*. Univ. Nebraska Studies 7:no. 4. pp. 100. 1907. Lincoln: University Publishing Company. 50 cents.

⁸ Annual report of the American Breeders' Association, Vol. 3. 8vo. pp. 305. Washington, D. C. 1907.